XUV probing of laser imprint using an Yttrium x-ray laser\* D.H. Kalantar, L.B. DaSilva, S.G. Glendinning, M.H. Key<sup>1</sup>, F. Weber, and S.V. Weber, Lawrence Livermore National Laboratory, and J.P. Knauer, Laboratory for Laser Energetics, University of Rochester - For direct drive ICF, a capsule is imploded by directly illuminating the surface with laser light. Beam smoothing and uniformity of illumination affect the seeding of instabilities at the ablation front. We have developed a new technique for studying the imprint of a laser beam on a We use an Yttrium x-ray laser as an XUV backlighter. This is relayed via multilayer optics onto a Si foil that is irradiated by a low intensity  $0.35\ \mu m$  laser beam. The foil is imaged onto a CCD camera to measure the optical depth modulation in the foil due to laser imprint. By using the XUV backlighter to radiograph a Si foil, we are able to measure small fractional variations in the foil thickness. We recorded images due to imprint from a 5x10<sup>12</sup> W/cm<sup>2</sup> drive beam incident on a 3 um Si foil at the time the shock launched by the ablation pressure breaks out at the back of the foil. We compare the cases of a static speckle pattern due to a random phase plate beam with a broad bandwidth SSD smoothed speckle pattern. We compare both cases with Lasnex simulation.

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